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ABSTRACT

The level of understanding about the topic of parents sufficient to handle patentable discoveries in the proper manner can readily be established at any institution, regardless of size, where there is an inclination. The possession of this understanding will allow the dissemination of important and valuable research findings by publication, by patenting, or by both in a manner that is likely to produce the greatest benefit for the institution, for the discovery, and for the public. Contained in this document are sections covering: the essentials of an invention-handling capability, the need for such capability, the nature and scope of patents, patents and publication, the elements of a university patent policy, organization for the administration and development of institutional inventions, invention disclosures, patents in sponsored research, and patent licensing. Appendixes include patents and copyrights, guidelines for keeping laboratory records, and guidelines for preparing an invention disclosure. (Author/PG)

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PATENTS AT COLLEGES AND UNIVERSITIES

Guidelines for the Development of Policies and Programs

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COMMITTEE ON GOVERNMENTAL RELATIONS
NACUBO 1974

A NOTE ON THESE GUIDELINES

Prepared by the Subcommittee on Patents, Copyrights, and Rights in Data of the Committee on Governmental Relations, these guidelines are designed to aid institutions in formulating patent policies. This booklet does not purport to be a manual of university patent administration nor does it cover the evaluation and marketing of new technology. The information herein is intended to complement that provided by the Committee in its guidelines on copyrights published in 1972.

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INTRODUCTION

When the word "patents" (or any of many terms encountered in dealing with patents) is mentioned in the usual academic setting, there is often a tendency for the listener to withdraw, occasionally manifesting an attitude that there is something esoteric and arcane about the subject. It is true that the area of patent law and its practice is one of the most complex of legal specialties, generally requiring both a technical and legal background in addition to a proficiency in patent law. It is also true that a level of understanding about the topic of patents sufficient to handle patentable discoveries in the proper manner can readily be established at any institution, regardless of size, where there is the inclination. The possession of this understanding will allow the dissemination of important and valuable research findings, by publication or by patenting, or by both, in a manner that is likely to produce the greatest benefit for the institution, for the discoverer, and for the public.

Institutions that have established patent policies have done so for a variety of reasons, usually to achieve one or more of the following objectives:

(a) To facilitate the transfer of technology and the utilization of the findings of scientific research to provide maximum benefit to the public therefrom.
(b) To encourage research, scholarship and a spirit of inquiry thereby generating new knowledge.
(c) To provide machinery by which the significance of discoveries may be determined so that the commercially meritorious may be brought to the point of public utilization.
(d) To assist in an equitable disposition of interests in inventions among the inventor, the institution, and a sponsor, when applicable.
(e) To provide individual incentives to inventors in the form of personal development, professional recognition, and financial compensation.
(f) To assist in the fulfillment of the terms of research grants and contracts.
(g) To safeguard the intellectual property represented by worthwhile inventions so that it may receive adequate patent protection.
(h) To facilitate the development of institutional patent agreements with the federal government.

I The Essentials of an Invention-handling Capability

For institutions to be able to handle discoveries that may have patentable significance, three conditions which need not be costly to acquire or expensive to maintain should be present. *The first* is the existence of an institutional patent policy, approved by the governing board, which can be used to define the rights and obligations of the institution, the inventor, and when applicable, a sponsor whenever an invention occurs. *The second* is the presence of a focal point within the institution, where there is an adequate level of patent understanding, to serve as a collection point and a conduit for the discovered information on its way to the Patent Office and to a development activity. *The third condition* is the existence of a capability to carry the development of the discovery forward to the point where it represents a commodity that is usable by the public and for which the institution can obtain a financial return. This last condition may be accomplished by an in-house patent management group, by an institution-affiliated foundation, or by arrangements with invention management agencies.

II The Need for Such Capability

There has been a constantly increasing emphasis on applied research output. Since the early sixties there has been a growing demand that educational institutions be "more relevant to the society." When this change is related to discoveries in the scientific and technological areas the demand becomes the question, "How can your discoveries be used?" The federal government, by its funding policies, has reinforced the need for the educational community to look at the "relevancy" of its research. Research proposals directed at the investigation of topics that have implicit use in the solving of problems of immediate concern are now more likely to be funded than those aimed at generating information that is basic yet unusable at the moment. The technical discoveries from this "relevant" research are more often found to be patentable than discoveries from basic research. Thus, more frequently than in the past, if an institution accepts federal research support, it will find itself faced with decisions relating to patents and how they should be handled. The President's Patent Policy Statement of August 23, 1971, the liberalization of government patent waiver policies, and the more widespread use by agencies of institutional patent agreement programs all indicate that the educational community may be required to be more involved in patent determinations in the years ahead. It follows that the provisions of the institutional patent policy should be developed to recognize, in so far as is possible, any current federal requirements or guidelines on the subject. A sound policy can facilitate the release of title rights by the government and be the basis for implementing an institutional patent agreement with one or more federal agencies.

The purpose of these guidelines is to assist each institution to find, with respect to inventions and patents, the level of activities best suited to its needs. The guidelines hold out no hope that inventions as assets represent a readily available source of funds that can be applied to solve acute financial problems. They do try to convey the suggestion that each institution should without excessive expenditures place itself in such a position that in the happy circumstance that

a commercially valuable discovery is made in its laboratories, it will have the capability to cause the discovery to be brought into public use.

III The Nature and Scope of Patents

A patent is a property right, granted by a sovereign nation, which gives the holder the right to control the manufacture, use and sale of an invention for a period of years. As property it may be sold or assigned, pledged, leased (licensed), willed or donated, and be the subject of contracts and agreements. The right to control may be accomplished by excluding others from these activities or by permitting the activities of others to take place under the terms of a license. The United States patent system is implicitly authorized by the Constitution in the provision that, "Congress shall have the power . . . to promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Legislation implementing the Constitutional provision is found in Title 35 of the U. S. Code.

Each country has its own requirements on patenting, including standards of what is and what is not patentable, formalities for establishing a patent, the effective date and duration of the patent grant, requirements relating to the use of a patent, and annual taxes to maintain it in force. Under the United States standards of patentability, all patent applications are examined for novelty, utility and nonobviousness, and it is the applicant's responsibility to establish these elements to the satisfaction of the Patent Office before the patent is allowed to issue. The duration of all U. S. patents is 17 years from the date of issue and they are not renewable as are copyrights (see Appendix A: Patents and Copyrights—A Comparison of Major Differences). In contrast to the practice in most foreign countries, there is currently no annual tax levied by the United States Government to maintain a patent in force, nor are there any current requirements that the teachings of a patent be a commercial reality within a given period of time, under penalty of compulsory licensing or forfeiture.

It is the responsibility of a patent holder (the patentee) rather than the government (the patentor) to police the use of his patent and either to bring infringing parties under a license or to prosecute them for infringement. If the patentee intends to keep the patent in force, he is obliged to defend the validity of the patent when it is attacked. The patent granted by the U. S. Patent Office is only prima facie evidence of the exclusive right it purports to establish. It may, therefore, be subsequently rebutted and invalidated in a proceeding in the federal courts if third parties formally charged with infringement present satisfactory proof that it should not have been issued.

The 1952 Patent Act sets forth those classes of patent matter that are eligible for patenting. That statute provides that any inventor who "invents or discovers a new or useful *process*, *machine*, *manufacture*, or *composition-of-matter*, or any *new and useful improvement thereof*, may obtain a patent therefor, subject to the conditions and requirements of the law." The law also allows the patenting of new varieties of *asexually produced plants* other than tuber-propagated plants or plants found in an uncultivated state. These six categories plus patents for designs comprise a complete list of subjects that the law deems to be patentable. Design patents, which relate to the ornamental appearance of useful articles, are seldom encountered in an educational setting. Subjects not within these categories are barred by the statute as unpatentable.

The law also specifies that a patentable invention must have *utility*. The applicant for a patent must also establish *novelty* in a patentable sense. Patentable novelty and commercial novelty are not necessarily synonymous. A device may lack novelty as far as the Patent Office is concerned and yet be received by the public as a "new" item. A third essential requirement set forth in the patent laws is that the invention must be *nonobvious* at the time of invention to a person having ordinary skill in the art to which it pertains.

Some subjects cannot be patented because they are outside the scope of patents. These subjects are:

1. Theories
2. Ideas
3. Plans of action

4. Results
5. Methods of doing business
6. Discoveries of laws of nature or scientific principles
7. Things immoral or injurious to health and the good of society
8. Works eligible for protection under the copyright laws

IV Patents and Publication

Patents and publication are closely related—in fact a patent is a form of publication, which describes an invention to the world at large in return for a limited period monopoly on use of the invention. However, care must be taken in publishing an invention in the more normally accepted format such as in a scientific or technical journal, if one is to avoid placing the invention in the public domain and losing the right to obtain a patent.

In the United States a patent may be obtained if a patent application is filed within one year after the invention is published. In many foreign countries a patent cannot be obtained if there has been any publication prior to patent application. However under an international convention, a patent application in the United States will preserve for one year the rights to file patent applications abroad even though there has been publication subsequent to the U. S. patent application but before foreign patent application.

V The Elements of a University Patent Policy

An institution seeking to establish or clarify its position regarding rights to and disposition of patentable inventions should develop a statement of patent policy. The statement should be broad enough to encompass all foreseeable patent situations yet specific enough to allow administration of it without frequent recourse to policy deliberations by an advisory committee; it should briefly define the administrative structure with which the staff must deal on these matters; and it should be directly and succinctly presented to allow easy understanding by those having minimal acquaint-

ance in such matters. The basic purpose of such a policy is to define the rights and obligations of both the inventor and the institution in their relationship on patent matters. To the extent that policies on consulting deal with patents, it is advisable to take such policies into account when formulating a patent policy.

The following topics are commonly found in institutional patent policies:

1. Preamble
2. Applicability of the policy
3. Establishment of the inventor commitment
4. Rights of the parties
5. The income-sharing arrangement
6. Administrative arrangements

Some institutional patent policies are incorporated into patent manuals which, in addition to stating policy, attempt to provide a brief orientation on patent matters to the reader. Such publications can be helpful to neophyte inventors. However, these manuals should be prepared in such a manner that the institutional policy is clearly distinguishable from what is general instructional material on the subject of patents.

The Preamble. Although this section in a policy is optional, its inclusion is recommended. When included, it should relate the basic purposes of the institution, its obligations to the public, and the scholarly aims of its faculty with the institution's interest in patents and how patents serve these ends. The preamble should establish a sound foundation for what is to follow. Since patents are a very practical manifestation of the institution's research activities, the preamble should be kept short and to the point.

The Applicability of the Policy. This section will attempt to define the research situations, the sources of funds, all categories of individuals who may invent (i.e. faculty, staff, or student), the activities these persons are engaged in, and any combinations of these elements that would bring an inventor into the scope of, or else exempt him from, the provisions of the policy. Educational institutions do not usually lay claim to all inventive concepts generated by their employees or students, but rather they limit themselves to those which arise as a result of the employ-

ment relationship or the use by the researcher of institution resources, facilities or information.

The Establishment of the Inventor Commitment. Once an institution determines the criteria for applying the policy to individuals, it may require its personnel to assign inventions to it in one of several ways (listed in generally decreasing order of enforceability):

(a) By a formal inventor agreement – a legally enforceable contractual commitment by an individual to dispose of inventions as determined by the institution. It becomes a standard form agreement for the institution, should be drafted by an attorney to ensure its enforceability, and is best executed by the individual when he assumes his employment.

(b) By a state statute which stipulates that inventions made in state institutions or by state employees be disposed of in a predetermined manner.

(c) By an individual giving his written assent to the stated patent policies of the institution, which policies pronounce an obligation by the individual with respect to inventions.

(d) By a stated patent policy containing a patent commitment which is established by the governing board, and brought to the attention of individuals, but to which such persons are not required to give their personal formal assent.

(e) By the presence of a policy allowing the individual to dispose of inventions as determined by the institution or retain title for himself, at his option.

To allow an institution conducting sponsored research to fulfill its contractual obligations, it is important and necessary to have in hand for every person engaged in such research a valid binding commitment to assign inventions.

The Rights of the Parties. The policy should specify what rights the institution, the inventor and outside sponsors have in the invention. The *institution* will usually receive a valid and binding assignment of title to the patent application together with a commitment by the inventor to cooperate in executing legal documents, reviewing patent prosecution papers, and in

some cases, assisting in the development or marketing of the patent. The *inventor* is entitled to receive from the institution a clear statement of his rights, his share of income and what the institution will do to bring the invention into public use, including a contingency for reassignment to the inventor. *Sponsors'* interests in these situations are usually represented by the institution based upon the terms of the research agreement. Sponsor equities in patents must be scrupulously observed by the institution to permit it to perform and maintain its contractual obligations.

Income-Sharing Arrangement. Educational institutions that accept assignment of patents from inventors customarily share royalty income with them. The inventor's share generally ranges from 15% to 50% of net income, although there are a few policies that authorize income outside of these limits. Some institutions use sliding scales of income-sharing between these limits with a greater percentage going to the inventor from the early receipts and with the rate of sharing declining as the amount of royalties increases. Most royalty-sharing arrangements are predetermined, i.e., the inventor cannot negotiate a higher rate of sharing than stipulated in the institutional policy. Predetermined sharing rates have the advantage that it is unnecessary to pass judgment on the relative worth of each invention. They are easier to administer and usually reward the inventor equitably because a valuable invention's true merit is reflected in the greater total royalty revenues it generates, a portion of which enures to the benefit of the inventor. Where several individuals collaborate on a patentable invention the inventor's income share is divided among them in portions agreeable among themselves (including co-developers who may not legally be inventors).

Administrative Arrangements Defined by Policy. Patent policies usually specify that patent activities be under the administrative cognizance of an institutional patent committee appointed by the governing board, the president, or the faculty senate with a majority of the individuals on the committee coming from scientific or technical disciplines. It is not uncommon for a dean, a vice president, or even the president to serve as chairman. This committee often has the responsibility

for recommending or establishing patent policy, adjudicating disputes, determining which inventions shall be the subject of patent applications, and overseeing the administration of patent matters within the institution. The size of the administrative organization below this committee will vary, depending in part upon the amount of research resulting in patents at the institution, and upon whether or not the institution chooses to assume its own patent development and marketing responsibilities or to delegate them to another organization. Even in an institution having a low-key, part-time patent operation, there should be at least one individual who has an understanding of the essential requirements for handling patentable data (which is, indeed, perishable). This should ensure that valuable property rights are not lost to the institution by premature disclosure, publication or public use prior to filing a patent application or to releasing the invention to an affiliated patent development group.

VI Organization for the Administration and Development of Institutional Inventions

The provisions of the institutional patent policy usually determine the make-up of the administrative organization for patents. A patent committee can usually be found at the top, reporting to the president, the governing board or the faculty senate. Serving the committee as its operating arm on either a part- or a full-time basis will be the institution's "focal point" on patents, an administrator who is usually drawn from either the legal department, the office of research administration, or the business office. The administrator need not be a patent or general attorney, but he must have, as a minimum, a thorough understanding of institutional patent policy and enough background in patent procedures and patent law to handle procedural and policy problems arising in the management of patents. In a modest institutional patent operation, this individual may come from one of the basic science departments and spend only a few hours per month at these duties. In a large operation, the patent administrator and any assistants may be a part of the institution's administrative group and often will work full time on patent-related matters.

The development and marketing of inventions is likely to be done in one of three ways. It may be done *in-house* with the institution controlling and performing the invention evaluation that precedes the decision to patent, the filing of patent applications, the demonstration of the invention's feasibility and the licensing (not necessarily occurring in this order). This first option is initially more costly, because it requires an early outlay for patent application costs and the overhead costs of patent administrative services. However, if sizable royalties are earned this approach is more likely to be the most advantageous overall.

The second option, patent management by an *institution-affiliated foundation* can have the advantages of better availability of funds to carry on the development of inventions (which is a speculative activity) and of greater freedom to employ commercial methods to develop and promote the use of the invention. Assuming equal capabilities to develop inventions the presence of a foundation in the picture may result in smaller income for the institution because of the foundation's expecting to share income. Both the in-house management and the institution-affiliated foundation management of patents allow the inventor to work closely with the unit that is promoting the invention. His ready assistance, and the background he brings with him, are often crucial to getting the invention covered by a patent and "off the ground" as a commercial success.

Patent development and marketing by one of a number of *patent management organizations* has some distinct advantages. This third alternative allows an institution to be active in patents with a minimum financial outlay, and it allows a large amount of legal, marketing and patent management expertise to be tapped at no immediate cost to the institution. The chief disadvantage in this arrangement is, of course, that a substantial portion of any royalties earned are shared with the patent management group as compensation for services. Also, because of the large number of inventions handled by organizations of this type and the geographical limitations involved, a question arises as to whether the valuable personal input of the inventor in development and marketing efforts may be diminished under this arrangement.

These three routes of invention development are not necessarily mutually exclusive for an entire patent program. Many institutions utilize more than one, depending upon the type of invention reported and the location of the various capabilities needed to develop it.

The availability of a patent attorney who is on call to answer questions, interpret the law, prepare, file and prosecute patent applications as the need arises and serve as a representative during patent-related negotiations is practically a must for any institution that will be involved with patents. Because of the diversity of complex patent subject matter that is generated in colleges and universities, it is desirable that this person be affiliated with a firm that contains individuals with a wide variety of technical backgrounds. The headquarters or the local chapters of the American Patent Law Association can be of assistance in making a good selection.

VII Transfer of Technology Outside of the Patenting Process

It is not uncommon for educational institutions to provide considerable public utilization of their scientific findings without the benefit of patents. The most obvious way this is accomplished is by the publication in appropriate journals of small bits of information which in themselves are not patentable but which in the aggregate are important contributions to the advancement of numerous technologies. More complete concepts are often produced, which may or may not be patentable and/or about which the institution is unsure of the commercial prospects. The institution has a responsibility to the public, to itself and to the individual developer, to move these discoveries into public use. Some lend themselves to nonexclusive release such as by publication, while others demand limited term exclusive arrangements to bring forth the incentive of commercial organizations to commit their resources.

Where some exclusivity to unpatented technology is necessary, disclosure agreements may be employed by the institution and the recipient organization to define the terms and conditions under which the information is released and under which the recipient

evaluates the concept. Such agreements usually provide for the ultimate protection of the institutional patent position, if any, and for follow-on licenses or other contracts that specify conditions such as those under which the recipient organization may commercialize the discovery, the degree to which it may be compensated therefor, the title to any patent that may be available, and so on. Institutions that are highly motivated to technology transfer or that have limited funding available for patent applications should consider this alternative. The decision of whether to seek a patent application or to go the disclosure agreement route is one that usually will be made at the time the invention is reviewed by the patent committee. Disclosure agreements are binding contracts between the two organizations. They must be carefully drawn and must define the idea disclosed with some precision. Therefore, their preparation calls for the services of an expert in such matters.

VIII Invention Disclosures

An invention disclosure in this context is a complete description of an invention written by the inventor to report an invention to the institution or a sponsor. Along with the original laboratory notebooks and records it is one of the most important documents in an institutional patent program. The invention disclosure is based upon the information contained in laboratory notebooks. (See Appendix B, *Guidelines for Keeping Laboratory Records.)* It is customary for the office responsible for patents to provide a disclosure form or a set of guidelines for preparing these disclosures. Regardless of which is used, completeness is more important than format. The invention disclosure should be written in good technical language rather than in a legalistic style. In the event the invention becomes the basis for a patent application, the patent attorney can translate it into language that is acceptable to the Patent Office.

The invention disclosure has value in several ways. By writing the disclosure, the inventor is usually required to clarify the inventive concept in his mind; and if the concept has not been reduced to practice, the disclosure requires him to better organize his thoughts

about it. A good disclosure is essential for the technical evaluation of the invention, for an accurate assessment of its commercial feasibility, and also for a determination of its patentability. In the latter sense, the disclosure is often initially employed as the descriptive information supplied to the person making the novelty search in the Patent Office, where its clarity and completeness have a definite bearing on the quality of the patent search that will result. The invention disclosure may later be used as the basis for the preparation of the patent application. Well prepared disclosures transmit the patentable idea to the patent attorney more readily and thereby allow him to prepare an application that precisely describes the invention, doing so with a minimum expenditure of attorney time and therefore of cost to the institution. Last but not least, when witnessed laboratory records bearing earlier dates are not available, the invention disclosure can serve as a means of proof of the date of conception, or at least the earliest recording of the invention. It thus may be an important document in any controversy over which of two parties first made the invention.

Disclosures of inventions are required under the terms of federal research agreements and must be sufficiently complete and of a quality that will allow the supporting agency to evaluate and prepare a patent application in the event that the contract terms entitle it to do so. A complete and accurate invention disclosure is extremely important to patent management organizations because they are usually not located in close proximity to the inventor. These organizations must, therefore, rely heavily upon the inventor's written description to assess the worth of the invention and to determine their interest in accepting it and in carrying it forward to patenting and commercial development. A typical set of instructions for preparing invention disclosures appears as Appendix C.

IX Patents in Sponsored Research

The patent policy of the institution may be an important consideration at the time a research proposal is submitted to a sponsoring agency. It is important for the faculty performing research to be aware of any agency patent policies that may be in conflict with the

institution's patent policy. If this information is known in advance, the faculty member will be able to determine the institution's position with regard to the submission of proposals that are likely to produce patent policy conflicts. When there is a conflict it may occasionally be possible to negotiate the differences thereby assuring the availability of research funds. If the faculty is made fully aware of the situation, the chances are improved that they will support the administration's efforts to negotiate acceptable arrangements. When the funding agency has an institutionally acceptable patent policy, there is usually no problem in accepting funding because the usual terms and conditions of the granting document will have been approved in advance. However, changes continually seem to be taking place in government regulations, contracts, and granting documents, and knowledgeable people in the office of research administration should therefore monitor the incoming grants and contracts to ensure that no changes have been made in the patent (as well as other) requirements. If changes have come about, the office responsible for patent matters should be alerted to interpret the changes with regard to the institution's own policy, and if necessary, assist research administration in preparing the necessary arguments to the funding agency to effect a modification of the terms of the contract.

Federal grants and contracts usually contain a provision on invention reporting. These requirements stipulate that the contractor make periodic reports of inventions made by researchers, including the timely submission of invention disclosures and a final report at the termination of the contract. Where it is determined that an invention has occurred as a result of or during the course of sponsored research, it is the duty of the office responsible for patents to obtain a complete and properly prepared disclosure from the investigator and to ensure that it is properly filed with the contracting officer in order that the grant or contract can be closed without undue delay.

X Patent Licensing

A license is the legal right to use the patented invention of another. It may be established by contract or

implied from the conduct or legal position of the parties. This discussion is concerned only with those established by contract. Licensing is the primary method by which a patented invention developed in an educational institution is put into public use. References in the bibliography contain considerable information on the licensing of patents. However, some important points to remember are as follows:

1. The degree of the licensee's motivation to employ the invention in a commercially successful way and the licensee's capabilities for development, manufacture and marketing are of prime importance.
2. A license agreement must be a valid and legally enforceable document which precisely defines the rights being transferred and the obligations assumed.
3. To protect the public interest, exclusive licenses should generally be for a limited term. They should be of sufficient duration to enable a licensee to recoup unusual development and market penetration costs plus a sufficient additional return to bring forth his risk capital.
4. Royalty rates can be assessed on a variety of bases and can vary over wide limits. In general, they are reasonably consistent for the same class of products.
5. Exclusive licenses should provide for cancellation in the event the licensee does not make adequate progress in development and marketing.
6. Licenses should provide that the licensee cannot use the name of the inventor or of the institution for sales or promotional purposes without prior approval.
7. In some cases an outright assignment of a patent for a consideration, lump sum or deferred, will be an attractive alternative to licensing.

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APPENDIXES

PATENTS AND COPYRIGHTS—A COMPARISON OF MAJOR DIFFERENCES

	Patents	Copyrights
Coverage	processes, machines, products of manufacturing, compositions of matter, plants, and improvements on the above, and designs	books, periodicals, lectures dramatic or dramatic-musical compositions, musical compositions, maps, works of art, drawings or plastic works of a scientific or technical character, computer programs, photographs, pictorial illustrations, labels, motion pictures and video tapes, audio recording
Essential criteria	Must be novel, have utility and be nonobvious.	Need not be novel, only the original product of the creator.
When statutory rights established	When patent is granted by the Patent Office (usually about three years after application date).	When the work is published containing the proper copyright notice (Registration of the right follows).
How statutory rights established	By filing a formal disclosure of the invention (with allowable appended claims) in the Patent Office together with the prescribed fee.	By depositing a copy or copies of the work in the Copyright Office together with the prescribed fee.

Examination	Examined for the essential criteria (see above).	No examination (other than meeting registration formalities).
Outside professional service required	Filing and prosecution requires services of a registered patent attorney.	None-Registration may be done by author.
Cost	Generally in the $1,000 to $2,000 range.	$6 plus the cost of the deposit copies.
Term and renewability	17 years, not renewable.	28 years, renewable for an additional 28 years.
Marking	Failure to place patent number on patented article does not invalidate the patent.	Failure to employ copyright notice on the original publication puts the work in the public domain.
Who may apply	Except in unusual circumstances, the inventor's signature must appear on the patent application.	Either the author or his assignee may copyright the work.

GUIDELINES FOR KEEPING LABORATORY RECORDS

1. Legibly enter in ink concurrent with your daily work a complete and accurate record of your research activities and sign and date each page.
2. Whenever possible, preface each series of pages with a brief heading of the most generic *nature* of the work performed (i.e. statement of problem) rather than what you expect or hope will be the *results* achieved. Avoid gratuitous conclusions.
3. Similarly, when an experiment or run is completed and it represents the reduction to practice of only one or more species, include a paragraph setting forth still other species and parameters of variables stating the reasons you expect them to be effective in order to later provide valid basis for a generic claim. This is conveniently included under a "Modifications and Extensions" heading and need not include complete data at that time.
4. Faithfully have your work corroborated by having your notebooks witnessed by dated signature of an associate (*not* a co-worker or one who collaborates in your research area and who could be or is a joint inventor). Notation of witness should appear after the last line of your experiment and not necessarily only at the bottom of every page. If necessary or desirable, explain in detail the work performed.
5. Prior to destroying any samples, run sheets or records of any kind, check with the director to make certain they are of *no* value to any project member.
6. Clear *all* proposed publications (including abstracts) with the director in order to most fully protect and preserve property rights in research.
7. Record your observation of physical results even if not fully appreciated or understood at that time.
8. Utilize the last 4-5 pages for an index as desired.
9. Start a new page for each new experiment and draw a continuous diagonal line through unused portions of pages remaining at the close of an experiment.
10. Avoid erasures but where necessary cross out with a single line.

UNIVERSITY OF MINNESOTA GUIDELINES FOR PREPARING AN INVENTION DISCLOSURE

Introduction

The following guidelines illustrate the preferred layout and content for invention disclosures. Completeness is very important in preparing the disclosure in order that it can serve as a basis for a worthwhile patent search and be the basis for preparing the patent application. To be complete, the disclosure should include all the pertinent experimental data available, both pro and con, which has a bearing on the inventive concept. (The data, if voluminous, may be attached as an appendix.) It is also important that the inventor have considered the various alternative ways of constructing (in the case of apparatus) or performing (in the case of a process) the invention. This is something a potential infringer would do, and having the alternative embodiments on hand permits the preparation of a patent application which is broad in scope. The inventor should, however, specify which embodiment is preferred.

The Disclosure

The disclosure should contain the following elements:

A. *A Title*. The ideal title is brief but comprehensive, technically accurate and descriptive.

B. *An Abstract of the Invention to be Disclosed* (of about 100 words).

C. *Statement of the Background of the Invention*. The disclosure should state the field of art to which the invention pertains. The basis for this requirement is that an accurate description will permit a future patent application to be properly classified in the Patent Office, and therefore, it is helpful if the inventor can accurately categorize his invention within the field of his endeavor.

D. *Description of the Prior Art*. A statement of the prior art known to the applicant should be set forth. This will include a description of the various existing devices or processes and their shortcomings that are remedied by the present invention. If published material such as scientific papers, patents, or commercial literature relating to or

describing the prior art is known to exist, it should be cited (or supplied, if available).

E. *Summary of the Invention*. In this section describe in detail:

1. How the invention is designed, and where alternative designs are available, describe these and select the preferred embodiment. To clarify, attach and refer to descriptive drawings, flow sheets, circuit diagrams, etc.
2. Where conditions such as time, temperature, pressure, etc. are relevant to the invention, ranges of operating conditions should be recited. Preferably these should be in terms of broad ranges of conditions and narrower optimum or preferred ranges. Where materials may be varied, sufficient specific materials should be enumerated to illustrate the range of usable materials. A sufficient number of specific working examples should be set forth to illustrate the variations in conditions and materials.
3. How the invention operates to produce a result or results not achieved in the prior art.
4. What new concept has been invented; describe succinctly.
5. All advantages such as efficiencies, cost benefits, etc. produced by these new results.

F. Indicate briefly and in general terms the utility of the invention, particularly for chemical cases. Where the utility is evident from the earlier sections, this section may be omitted.

G. List (and append, if possible) all publications in which the invention has been described or occasions on which it was described orally to others; for example, at symposiums.

H. Provide all budget numbers which were used to defray any research costs that are invention-related.

I. *Signatures, Witnesses, and Dating*. Each inventor should sign the disclosure before a witness who understands the invention. The witness will also sign. Each set of signatures (inventor and his witness) should be dated.